

*SEMAPROCHILODUS VARIII*, A NEW SPECIES  
OF PROCHILODONTID FISH  
(OSTARIOPHYSI: CHARACIFORMES) FROM  
THE MAROWIJNE RIVER, SURINAM

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*Abstract.*—*Semaprochilodus varii* is described from localities in the lower and upper portions of the Marowijne River, Surinam. The species is distinguished from all other *Semaprochilodus* species by its lower number of pored scales in the lateral-line (40 or 41). In addition the combination of the low lateral-line count and other meristic characters outlined in the text further distinguish *S. varii* within the genus.

*Resumo.*—*Semaprochilodus varii*, uma nova espécie da família Prochilodontidae, é descrita de duas diferentes localidades na bacia do rio Marowijne, Suriname. *S. varii* pode ser separada das outras espécies do gênero por possuir um baixo número de escamas perfuradas na linha-lateral (40 ou 41). Além disso, o baixo número de escamas na linha-lateral em combinação com outros caracteres merísticos descritos no texto também distingue *S. varii* dentro do gênero.

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During ongoing phylogenetic and revisionary studies of the family Prochilodontidae, specimens of a new species belonging to the genus *Semaprochilodus* Fowler were found in the collections of the American Museum of Natural History and the Instituut voor Taxonomische Zoölogie (Zoölogisch Museum). The specimens originated in two different localities in the Marowijne River system in Surinam; one in the upper reaches and another near the mouth of the river, with the species presumably widely distributed throughout the basin. *Semaprochilodus* specimens from the Marowijne River system were previously wrongly identified as *S. insignis* (Schomburgk), due to the present confused state of prochilodontid taxonomy.

*Methods and materials.*—The methods of counting and measuring specimens in this paper are those outlined in Fink & Weitzman (1974:1–2). Standard length (SL) and other body measurements were taken in mm

and are expressed as percentages of the standard length or, in the case of subunits of the head, as percentages of the bony head length. Ranges of counts include all specimens, with the values in square brackets being those of the holotype. Counts of total vertebrae are from radiographs and include the four vertebrae of the Weberian apparatus, with the fused  $PU_1 + U_1$  of the caudal skeleton counted as a single element. All perforate lateral-line scales were counted. In counts of fin rays, lower case Roman numerals indicate unbranched fin rays, and Arabic numbers indicate branched fin rays. In the dorsal-fin ray counts the predorsal spine is treated as an unbranched ray. Tooth counts were taken from the left side of the jaws.

Specimens examined for this study are deposited in the following institutions: American Museum of Natural History, New York (AMNH); Museu de Zoologia da Universidade de São Paulo, São Paulo (MZUSP); National Museum of Natural

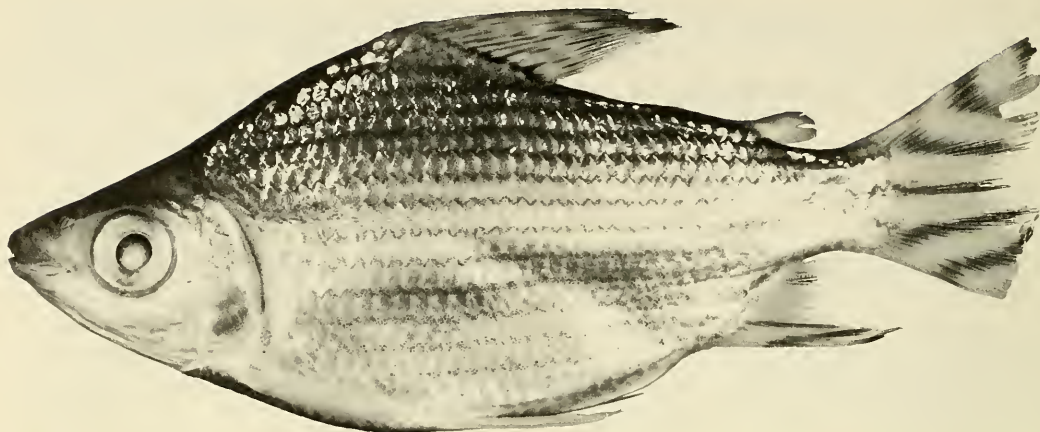


Fig. 1. *Semaprochilodus varii*, new species, holotype ZMA 106.222, SL 66.3 mm, Surinam, Marowijne River, about 25 km south of Albina, 17 Jun 1966.

History, Washington, D.C. (USNM); and Instituut voor Taxonomische Zoölogie (Zoölogisch Museum), Amsterdam (ZMA).

*Semaprochilodus varii*, new species  
Figs. 1, 2, Table 1

*Semaprochilodus insignis*.—Mago-Lecia 1972:60.—Géry 1977:215 [Guianas].—Le Bail et al. 1984:58, Fig. 2a [French Guiana].

*Holotype*.—ZMA 106.222, SL 66.3 mm, Surinam, Marowijne District, Marowijne River, about 25 km south of Albina, collected by H. Nijssen, 17 Jun 1966.

*Paratypes*.—6, ZMA 119.877, SL 55.5–72.4 mm.—5, ZMA 106.372, SL 60.5–73.4 mm.—4, USNM 285719, SL 59.6–64.7 mm (1 specimen cleared and counterstained for cartilage and bone).—2, MZUSP 37177–78, SL 65.1–69.9 mm (all preceding paratypes with same collection data as holotype).—1, AMNH 16406, Surinam, Oelemari and Litani rivers, SL 279.6 mm, D.C. Geisjkes, 14 Mar 1939.

*Diagnosis*.—Distinguished from all other nominal species of *Semaprochilodus* (*S. amazonensis* (Fowler, 1906), *S. binotatus* (Schomburgk, 1841), *S. brama* (Valenciennes, 1849), *S. insignis* (Schomburgk, 1841), *S. kneri* (Pellegrin, 1909), *S. laticeps*

(Steindachner, 1879), *S. squamilentus* Fowler, 1941, *S. taeniurus* (Valenciennes, 1811), and *S. teraponura* (Fowler, 1906)) by having 40 or 41 pored scales in lateral-line instead of 45 or more in those taxa. The combination of low lateral-line count and 16 horizontal scale rows around caudal peduncle, 11 to 13 scales in middorsal line between posterior termination of dorsal-fin base and adipose-fin origin, 10 to 12 median predorsal scales and 36 or 37 vertebrae, further distinguish *S. varii* within the genus.

*Description*.—Table 1 gives morphometrics of the holotype and paratypes. Body moderately deep, compressed, greatest depth at origin of dorsal fin. Dorsal profile of head slightly concave. Dorsal body profile slightly convex predorsally; straight and posteroventrally slanted along base of dorsal fin; straight from posterior termination of dorsal fin to adipose fin and concave on caudal peduncle. Dorsal surface of body slightly keeled predorsally and rounded transversely dorsally posterior to dorsal fin. Ventral body profile moderately convex from tip of lower jaw to termination of anal fin base, ventral profile of caudal peduncle concave. Prepelvic region flattened proximate to region of pelvic-fin insertion. A distinct midventral keel present between pelvic-fin insertion and anus.

Table 1.—Morphometrics of holotypes and paratypes of *Semaprochilodus varii*: A, range for paratypes (n = 17) collected together with the holotype, ZMA 119.877 and 106.372, USNM 285719 and MZUSP 37177–78; B, average for the same specimens; C, values for the largest paratype, collected in the upper reaches of the Marowijne River system, AMNH 16406. Standard length expressed in mm; measurements 1 to 15 are percentages of standard length; 16 to 20 are percentages of bony head length.

	Holotype	A	B	C
Standard length	66.3	73.4–55.5	64.2	279.6
1. Greatest body depth	47.5	44.5–48.3	46.0	43.5
2. Snout to dorsal-fin origin	49.8	47.2–50.6	48.7	51.0
3. Snout to pelvic-fin origin	54.8	53.0–57.6	54.4	51.3
4. Snout to anus	77.8	77.7–83.4	79.3	80.9
5. Snout to anal-fin origin	81.7	81.2–85.6	82.3	84.2
6. Posterior termination of dorsal-fin base to adipose-fin origin	24.1	21.0–26.0	23.7	25.2
7. Posterior termination of dorsal-fin base to end of caudal peduncle	40.1	37.8–42.1	39.0	40.0
8. Dorsal-fin base length	19.5	17.5–21.4	19.9	17.6
9. Dorsal-fin length	34.4	33.6–43.6	40.2	29.1
10. Anal-fin base length	13.0	11.6–13.6	12.8	11.8
11. Pectoral-fin length	20.7	20.3–22.9	21.7	21.5
12. Pelvic-fin length	22.2	21.9–24.4	23.3	15.3
13. Caudal peduncle length	11.9	11.5–14.4	12.7	12.8
14. Caudal peduncle depth	12.0	11.2–12.7	11.7	12.6
15. Bony head length	31.7	29.4–33.7	31.7	31.7
16. Snout length	39.0	32.5–38.9	36.2	41.2
17. Horizontal eye diameter	30.0	29.6–33.5	31.3	22.9
18. Postorbital length	34.3	34.0–39.0	35.7	35.1
19. Least width interorbital	45.2	43.4–48.1	45.5	46.5
20. Gape width	41.9	40.4–46.2	42.5	45.8

Head acute in profile. Mouth terminal. Snout length exceeding horizontal eye diameter; with nostrils of each side close together, anterior opening circular, posterior one crescent shaped. Adipose eyelid present but scarcely developed, more pronounced on anterior border, leaving most of eye uncovered. First infraorbital greatly enlarged, its ventral border together with anterior border of anteroventrally expanded second infraorbital delimiting a triangular notch bordering posterior margin of very fleshy lips (see Roberts 1973:219, Fig. 17 for very similar situation in *Ichthyoelephas*, and Vari 1983:33, 49, for phylogenetic significance of second infraorbital form). Fleshy lips forming oral disc when protruded. Functional teeth in two rows in each jaw; internal tooth row of upper and lower jaws v-shaped. External tooth rows on both jaws follow margins of lips, with about 80 teeth in each half of upper jaw and 65 in each half of lower



Fig. 2. Map of the Guianas and neighboring region showing collecting localities of specimens reported on this paper: 1, Marowijne River, about 25 km south of Albina (holotype and all ZMA, MZUSP and USNM paratypes); 2, Approximate locality including the rivers Litani and Oelemari (AMNH 16406 paratype).



jaw in holotype. V-shaped inner tooth row on upper jaw with 11 to 15 [15] teeth on left side; v-shaped inner tooth row on lower jaw with 7 to 9 [9] teeth on left side. All teeth movably implanted in fleshy lips, of similar size, spoon-shaped in frontal view (see Mago-Leccia 1972, Fig. 4B for photograph of *Semaprochilodus* teeth). Upper and lower lips bordered by small globular fleshy papillae.

Scales cycloid. Scales in dorsal midline between posterior termination of dorsal-fin base and adipose-fin origin with tongue-shaped membranous process on posterior border (as described by Mago-Leccia 1972: 58). Lateral-line completely pored, with 40 or 41 (2 paratypes with 40) [41] pored scales; 8 [8] transverse scale rows from origin of rayed dorsal fin to lateral-line; 8 [8] horizontal scale rows from origin of pelvic fin to lateral-line; 6 or 7 (5 paratypes with 7) [6] horizontal scale rows from origin of anal fin to lateral-line; 10 to 12 (1 paratype with 10 and 9 paratypes with 11) [10] median predorsal scales; 11 to 12 (1 paratype with 11 and 8 paratypes with 12) [12] scales in middorsal line between posterior termination of dorsal-fin base and adipose-fin origin; 16 [16] horizontal scale rows around caudal peduncle.

Dorsal fin preceded by small anteriorly bifurcated spine (see Géry 1977:367 for morphologically similar structure in *Prochilodus*) considered herein as unbranched ray in fin-ray counts. Dorsal-fin rays iii,10 [iii,10]; anal-fin rays iii,8 [iii,8]; pectoral-fin rays i,14 to i,17 (i,15 most common) [i,15]; pelvic-fin rays i,7 or i,8 (i,7 rare) [i,8]; principal caudal-fin ray count 10/9 [10/9].

Rayed dorsal-fin distally pointed; posterior unbranched and anterior branched rays longest, subequal; fin origin nearer to snout tip than to caudal-fin base. Longest length of adipose dorsal fin about two-thirds of horizontal eye diameter, its origin on vertical imaginary line crossing middle of anal-fin base. Pectoral fin distally pointed; when depressed posterior tip reaching or almost

reaching pelvic-fin origin. Pelvic fin falcate, its origin slightly posterior of vertical imaginary line passing through origin of dorsal fin; when depressed posterior tip reaching approximately two-thirds of distance to anus. Axillary scale present, its length about one-third of longest pelvic-fin length. Anal fin posterior unbranched and anterior branched rays longest, subequal. Caudal fin forked. Total vertebrae 36 or 37 (3 paratypes with 36) [37].

*Color in alcohol.*—Background body color in holotype and in paratypes collected with it silvery to silvery-brown on dorsal half of body and head. About 13 irregular wavy dark longitudinal lines on sides of body; lines formed by chromatophore concentrations on dorsal and ventral margins of exposed fields of scales. Seven wavy lines above and 6 below lateral-line; lines less regular across caudal peduncle. Field of brown chromatophores on membranous margin of opercle and most of visible lateral surfaces of bones of pectoral girdle. Rayed dorsal fin with about 5 irregular dark lines originating at its anterior margin, roughly parallel to dorsal-fin base. Adipose dorsal fin with dusky dorsal border. Pectoral and pelvic fins hyaline. Anal fin with chromatophore fields forming 4 or fewer somewhat irregular oblique dark stripes; the three anteriormost stripes roughly parallel. Caudal fin with 10 or fewer dark stripes, one horizontal stripe extending approximately across middle fin rays; 5 or fewer oblique stripes on dorsal caudal-fin lobe and 4 or fewer oblique stripes on ventral caudal-fin lobe. Iris silvery-yellow with dusky dorsal and ventral areas.

AMNH paratype lacking guanine on scales, overall coloration tan. Number of stripes on caudal fin in this much larger specimen apparently increased. Definite statement of number of stripes not possible since fin damaged (see Mago-Leccia 1972: 58 for comments on ontogenetic change in caudal-fin color pattern in *Semaprochilodus*). Dense chromatophore field covering

most of visible lateral surface of pectoral-girdle bones, creating a distinct sickle-shaped dark area immediately posterior to opercular opening; postopercular membrane dusky.

*Distribution.*—Marowijne River system of Surinam and French Guyana.

*Etymology.*—*varii*, in honor of Dr. Richard P. Vari of the National Museum of Natural History, who demonstrated the monophyly of the Prochilodontidae and also advanced a hypothesis of its phylogenetic position.

*Remarks.*—Mago-Leccia (1972:60), in his revision of Venezuelan prochilodontids, states that *S. insignis* (Schomburgk) occurs, among other places, in the “Guayanas.” During the ongoing revisionary studies of the family Prochilodontidae no specimens of *S. insignis* were found among examined specimens from the Guianas; all Guianan specimens rather belonged to the species described herein. Mago-leccia gives no reference as the basis for his citation of *S. insignis* in the Guianas, and it is more likely his reference is to *S. varii*. Géry (1977:215) and Le Bail et al. (1984:58, Fig. 2A) reported *S. insignis* from “Guianas” and “Guyane” respectively. Géry gives a range of 38 to 41 scales in the lateral-line for the species and Le Bail et al. give as an identifying character for the species the possession of less than 42 scales in the lateral-line. Thus in both cases the cited species is *S. varii* instead of *S. insignis* (see “Diagnosis” above). In the same paper Géry states that juveniles have four oblique bars on each caudal-fin lobe and adults seven bars. In the illustration by Le Bail et al. there is a horizontal stripe on the middle caudal-fin rays and eight oblique stripes in the dorsal caudal-fin lobe and seven in the ventral one. In the same figure the anal fin has five oblique stripes and there is a sickle-shaped black mark immediately posterior of the opercular margin. These pigmentation features agree with the data obtained in this study for *S. varii* with one exception (see “Color in alcohol” for com-

ments about possible ontogenetic increase in the number of caudal-fin stripes and development of a distinct sickle-shaped postopercular dark band). The only pigmentation difference between the figure of Le Bail et al. and the specimens examined here is the presence of five oblique dark stripes in the anal fin in their figure. None of the specimens examined in this study have more than four oblique stripes on the anal fin. This difference may be a function of an ontogenetic increase in anal-fin stripes comparable to that found for caudal-fin stripes. A definite statement in the number of stripes in very large specimens is not possible due to fin damage in the largest paratype.

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